African Invertebrates 58(2): 11–20 (2017)
doi: 10.3897/AfrInvertebr.58.13226
http://africaninvertebrates.pensoft.net

SHORT COMMUNICATION

African Invertebrates
A journal of biodiversity research

# English names of the megadrile earthworms (Oligochaeta) of KwaZulu-Natal

Adrian John Armstrong[1], Thembeka Clara Nxele[2]

**1** *Biodiversity Research and Assessment Division, Ezemvelo KZN Wildlife, P.O. Box 13053, Cascades 3202, KwaZulu-Natal, South Africa* **2** *Department of Natural Science, KwaZulu-Natal Museum, 237 Jabu Ndlovu Street, Pietermaritzburg 3200, KwaZulu-Natal, South Africa*

Corresponding author: *Adrian John Armstrong* (Adrian.Armstrong@kznwildlife.com)

Academic editor: *D. Plisko* | Received 12 April 2017 | Accepted 27 April 2017 | Published 22 May 2017

*http://zoobank.org/84B5F182-8EBB-4C39-9E08-CFA36427D06*

**Citation:** Armstrong AJ, Nxele TC (2017) English names of the megadrile earthworms (Oligochaeta) of KwaZulu-Natal. African Invertebrates 58(2): 11–20. https://doi.org/10.3897/AfrInvertebr.58.13226

## Abstract

Certain groups of invertebrates are becoming mainstreamed in conservation activities in KwaZulu-Natal, especially taxa that have many narrow-range species endemic to the province. As a result, there may be a need to assign common (in this case English) names where these are unavailable. A list of scientific names and standardised common names is presented for earthworm species occurring in the province of KwaZulu-Natal, north-eastern South Africa.

## Keywords

Earthworms, English names, Acanthodrilinae, Microchaetidae, Tritogeniidae, KwaZulu-Natal, South Africa

## Introduction

This paper is the second providing English names for invertebrate groups that have many species endemic to the Maputaland-Pondoland-Albany biodiversity hotspot in the eastern region of South Africa, in the middle of which lies most of the province of KwaZulu-Natal (Mittermeier et al. 2005). The reasons for providing English names for these invertebrates, including now earthworms, are given in Armstrong and Hamer (2015). Land transformation is probably the most important threat facing indigenous

Copyright *Adrian J. Armstrong, Thembeka C. Nxele*. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

earthworm species in KwaZulu-Natal (e.g. Plisko 2000a), and 53 % of the total provincial landscape was in a natural state in 2011 (Jewitt et al. 2015). By 2050, Jewitt et al. (2015) estimate that 45 % of KwaZulu-Natal will remain in a natural state. As a result, the conservation requirements of the endemic invertebrate species need to be included in conservation planning and environmental impact assessments (McGeoch et al. 2011). The vulnerability of these species to extinction needs to be communicated to the general public who relate more to English names than scientific names. Eighty-eight earthworm species are currently thought to be endemic to KwaZulu-Natal, and many have very small total distribution ranges. Earthworms are slowly being incorporated into conservation planning and environmental impact assessments in KwaZulu-Natal (McGeoch et al. 2011). The provided list can be used as the basis for common names of genera and species elsewhere in South Africa should this be required.

The scientific name of an earthworm species may be based on the Latin or Greek language, or sometimes on the English or local language. The name of the species may refer to selected, specific, external or internal anatomical characters, based often on a single specimen, the Holotype, during its description. These characters may not be fully developed in an immature specimen. Many species have been named after the type locality, but this does not mean that it is the only species present at that locality. Many species are named after a person who collected, or assisted with the collection of, the specimen or who donated the specimen to a collection. Such a name does not indicate any diagnostic characters for the identification of the species. The same goes for species named in honour of a person or a property, or for species named for any other reason apart from a diagnostic identification character. All of the implemented common names should be treated as additional descriptions of the species with respect to already existing data.

## Methods of compilation

English names for various species of earthworm have been in use for some time (Ezemvelo KZN Wildlife Biodiversity Database). These common names were taken as the starting point for the naming of the earthworm species in KwaZulu-Natal. Some genera in the province can be given names according to characteristics that are quite easily observable to the lay-person. However, since the internal organs and minute external setae are important distinguishing characteristics of families, genera and species of earthworm, the scientific names may reflect some aspect of these distinguishing characteristics. Therefore the name often does not describe readily observable features. The species occurring in KwaZulu-Natal and the scientific nomenclature were obtained from relevant publications (Nxele 2015; Plisko 1992, 1993, 1996a,b, 1997, 1998, 2000a,b, 2002a,b, 2003, 2004, 2005, 2006, 2007, 2008, 2012, 2013; Plisko and Zicsi 1991; Pickford 1927, 1937; Kinberg 1867; Michaelsen 1899, 1907, 1913, 1928; Benham 1892; Beddard 1897, 1907; Reinecke and Ryke 1969; Cognetti de Martiis 1906; Zicsi 1998; Zicsi and Pajor 1992).

## Results

Table 1 gives the scientific names and English names of the species of earthworms known from KwaZulu-Natal.

**Table 1.** English names for earthworms in the subfamily Acanthodrilinae and families Microchaetidae and Tritogeniidae occurring in KwaZulu-Natal, South Africa.

| SCIENTIFIC NAME | ENGLISH NAME |
|---|---|
| **Subfamily Acanthodrilinae** | **Bristly earthworms (Fig. 1).** English name derived from their characteristic setae. |
| *Chilota dilatus* Plisko, 2007 | Projecting-papillae bristly earthworm |
| *Chilota quindecimus* Pickford, 1937 | Unique-fifteenth-segment bristly earthworm |
| *Eodriloides thompsoni* Plisko, 2007 | Thomson's bristly earthworm |
| *Parachilota braunsi* (Michaelsen, 1899) | Brauns' bristly earthworm |
| *Parachilota editha* (Pickford, 1927) | Edith's bristly earthworm |
| *Parachilota hutchinsoni* Pickford, 1937 | Hutchinson's bristly earthworm |
| *Parachilota karkloofi* Zicsi, 1998 | Karkloof bristly earthworm |
| *Parachilota kranskopensis* Pickford, 1937 | Kranskop bristly earthworm |
| *Parachilota minimus* Zicsi & Pajor, 1992 | Small bristly earthworm |
| *Parachilota nanus* Pickford, 1937 | Dwarf bristly earthworm |
| *Parachilota ncandu* Plisko, 2008 | Ncandu bristly earthworm |
| *Parachilota photodilus* (Beddard, 1897) | Coastal bristly earthworm |
| *Parachilota timothyi* Plisko, 2008 | Timothy's bristly earthworm |
| *Parachilota traegardhi* (Michaelsen, 1907) | Traegardh's bristly earthworm |
| *Parachilota uysae* Plisko, 2008 | Uys' bristly earthworm |
| *Parachilota wahlbergi* (Michaelsen, 1899) | Wahlberg's bristly earthworm |
| *Parachilota warreni* (Michaelsen, 1913) | Warren's bristly earthworm |
| *Parachilota wittebergensis* Pickford, 1937 | Witteberg bristly earthworm |
| *Udeina adriani* Plisko, 2004 | Adrian's bristly earthworm |
| *Udeina anneae* Plisko, 2004 | Anne's bristly earthworm |
| *Udeina mapelane* Plisko, 2004 | Mapelane bristly earthworm |
| *Udeina nkandla* Plisko, 2004 | Nkandla bristly earthworm |
| *Udeina petrosi* Plisko, 2004 | Petros' bristly earthworm |
| *Udeina pliskoae* Zicsi, 1998 | Plisko's bristly earthworm |
| *Udeina qudeni* Plisko, 2004 | Qudeni bristly earthworm |
| **Family Microchaetidae** | **Wrinkled earthworms** (Figs 2, 3). English names derived from their many body rings. |
| *Geogenia ambita* (Plisko, 1998) | Encircling-gland wrinkled earthworm |
| *Geogenia caementerii* (Michaelsen, 1913) | Pietermaritzburg wrinkled earthworm |
| *Geogenia distasmosa* Plisko, 2003 | Interesting wrinkled earthworm |
| *Geogenia gripha* Plisko, 2002 | Puzzle wrinkled earthworm |
| *Geogenia herberti* Plisko, 2002 | Herbert's wrinkled earthworm |
| *Geogenia idechorita* Plisko, 2003 | Ngele forest wrinkled earthworm |
| *Geogenia minnehaha* Nxele, 2015 | Minnehaha wrinkled earthworm |
| *Geogenia mkuzi* Plisko, (1992 ) | Mkuzi wrinkled earthworm |
| *Geogenia natalensis* (Kinberg, 1867) | Natal wrinkled earthworm |
| *Geogenia parva* (Michaelsen, 1913) | Little wrinkled earthworm |

**Figure 1.** Subfamily Acanthodrilinae (Bristly earthworms): Timothy's bristly earthworm *Parachilota timothyi* Plisko, 2008.

**Figure 2.** Family Microchaetidae (wrinkled earthworms): green giant wrinkled earthworm *Microchaetus papillatus* Benham, 1892.

| SCIENTIFIC NAME | ENGLISH NAME |
|---|---|
| *Geogenia pondoana* (Michaelsen, 1913) | Pondoland wrinkled earthworm |
| *Geogenia quaera* Plisko, 2003 | Hluhluwe wrinkled earthworm |
| *Geogenia tegwana* Plisko, 2005 | Tegwan wrinkled earthworm |
| *Geogenia tuberosa* (Plisko, 1998) | Glandular wrinkled earthworm |
| *Geogenia zaloumisi* (Plisko, 1992) | Zaloumis' wrinkled earthworm |
| *Microchaetus papillatus* Benham, 1892 | Green giant wrinkled earthworm |
| *Microchaetus vernoni* Plisko, 1992 | Vernon's giant wrinkled earthworm |
| *Proandricus adami* Plisko, 2003 | Adam's wrinkled earthworm |
| *Proandricus adriani* Plisko, 2000 | Adrian's wrinkled earthworm |
| *Proandricus alatus* Plisko, 1996 | Flanged wrinkled earthworm |
| *Proandricus amphius* Plisko, 2003 | Encircling-clitellum wrinkled earthworm |

**Figure 3.** Family Microchaetidae (wrinkled earthworms): setaceous wrinkled earthworm *Proandricus setosus* Plisko, 1996.

| SCIENTIFIC NAME | ENGLISH NAME |
|---|---|
| *Proandricus armstrongi* Plisko, 2002 | Armstrong's wrinkled earthworm |
| *Proandricus babanango* Plisko, 1992 | Babanango wrinkled earthworm |
| *Proandricus beddardi* (Benham, 1892) | Beddard's wrinkled earthworm |
| *Proandricus bergvillensis* Plisko, 2000 | Bergville wrinkled earthworm |
| *Proandricus bourquini* Plisko, 1996 | Bourquin's wrinkled earthworm |
| *Proandricus bulwerensis* Plisko, 1992 | Bulwer wrinkled earthworm |
| *Proandricus colletti* (Beddard, 1907) | Collett's wrinkled earthworm |
| *Proandricus comptus* Plisko, 1996 | Ornamented wrinkled earthworm |
| *Proandricus crookesi* Plisko, 2002 | Crookes' wrinkled earthworm |
| *Proandricus entumeni* Plisko, 1992 | Entumeni wrinkled earthworm |
| *Proandricus gracilis* (Michaelsen, 1907) | Slender wrinkled earthworm |
| *Proandricus hedothecus* Plisko, 2000 | Pongola wrinkled earthworm |
| *Proandricus hlatikulu* Plisko, 2002 | Hlatikulu wrinkled earthworm |
| *Proandricus holbeck* Plisko, 2005 | Holbeck wrinkled earthworm |
| *Proandricus injasuti* Plisko, 2002 | Injasuti wrinkled earthworm |
| *Proandricus ivari* (Michaelsen, 1907) | Midlands wrinkled earthworm |
| *Proandricus jasoni* Plisko, 1992 | Jason's wrinkled earthworm |
| *Proandricus lesothoensis* (Reinecke & Ryke, 1969) | Lesotho wrinkled earthworm |
| *Proandricus lovuus* Plisko, 2003 | Lovu wrinkled earthworm |
| *Proandricus marleyi* (Michaelsen, 1928) | Marley's wrinkled earthworm |
| *Proandricus martensi* Plisko, 2002 | Martens' wrinkled earthworm |

**Figure 4.** Family Tritogeniidae (stumpy earthworms): Zululand stumpy earthworm *Tritogenia zuluensis* (Beddard, 1907).

| SCIENTIFIC NAME | ENGLISH NAME |
|---|---|
| *Proandricus michelleae* Plisko, 2002 | Michelle's wrinkled earthworm |
| *Proandricus modestus* (Michaelsen, 1899) | Modest wrinkled earthworm |
| *Proandricus notabilis* Plisko, 2005 | Noteworthy wrinkled earthworm |
| *Proandricus oresbiosus* Plisko, 2003 | Mountain-dwelling wrinkled earthworm |
| *Proandricus ortyi* Plisko, 2000 | Orty's wrinkled earthworm |
| *Proandricus pajori* Plisko, 1993 | Pajor's wrinkled earthworm |
| *Proandricus richerti* Plisko, 2002 | Richert's wrinkled earthworm |
| *Proandricus setosus* Plisko, 1996 | Setaceous wrinkled earthworm |
| *Proandricus thornvillensis* Plisko, 1992 | Thornville wrinkled earthworm |

| SCIENTIFIC NAME | ENGLISH NAME |
|---|---|
| **Family Tritogeniidae** | **Stumpy earthworms** (Fig. 4). The English name is derived from the relatively plump, compact shape, usually shorter than species of Microchaetidae. |
| *Michalakus initus* Plisko, 1996 | Two-gizzard stumpy earthworm |
| *Tritogenia alveata* Plisko, 1997 | Invaginated stumpy earthworm |
| *Tritogenia annetteae* Plisko, 1997 | Annette's stumpy earthworm |
| *Tritogenia ataxia* Plisko, 1997 | Disorderly-bristled stumpy earthworm |
| *Tritogenia curiosa* Plisko, 1997 | Curious stumpy earthworm |
| *Tritogenia curta* Plisko & Zicsi, 1991 | Short stumpy earthworm |
| *Tritogenia debbieae* Plisko, 2003 | Debbie's stumpy earthworm |
| *Tritogenia diversa* Plisko, 1997 | Diverse stumpy earthworm |
| *Tritogenia douglasi* Plisko, 1997 | Douglas' stumpy earthworm |
| *Tritogenia herbana* Plisko, 1997 | Herb stumpy earthworm |
| *Tritogenia hiltonia* Plisko, 2003 | Hilton stumpy earthworm |
| *Tritogenia howickiana* (Michaelsen, 1913) | Howick stumpy earthworm |
| *Tritogenia insolita* Plisko, 1997 | Trapeziform-clitellum stumpy earthworm |
| *Tritogenia karkloofia* Plisko & Zicsi, 1991 | Karkloof stumpy earthworm |
| *Tritogenia koilia* Plisko, 1997 | Oval-tuberculate stumpy earthworm |
| *Tritogenia liversagei* Plisko, 1997 | Liversage's stumpy earthworm |
| *Tritogenia lunata* Plisko, 1997 | Crescent-shaped-tuberculate stumpy earthworm |
| *Tritogenia melmothana* (Michaelsen, 1928) | Melmoth stumpy earthworm |
| *Tritogenia miniseta* Plisko, 1997 | Minute-bristled stumpy earthworm |
| *Tritogenia monosticha* Plisko, 1997 | Single-rowed stumpy earthworm |
| *Tritogenia morosa* Cognetti de Martiis,1906 | Morose stumpy earthworm |
| *Tritogenia mucosa* Plisko & Zicsi, 1991 | Slimy stumpy earthworm |
| *Tritogenia ngelensis* Plisko, 1997 | Ngele stumpy earthworm |
| *Tritogenia ngomensis* Plisko, 1992 | Ngome stumpy earthworm |
| *Tritogenia phinda* Plisko, 2005 | Phinda stumpy earthworm |
| *Tritogenia qudeni* Plisko, 2003 | Qudeni stumpy earthworm |
| *Tritogenia shawi* Plisko & Zicsi, 1991 | Shaw's stumpy earthworm |
| *Tritogenia soleata* Plisko, 1997 | Horseshoe-gland stumpy earthworm |
| *Tritogenia sulcata* Kinberg, 1867 | Glandular stumpy earthworm |
| *Tritogenia tetrata* Plisko, 2003 | Four-rowed stumpy earthworm |
| *Tritogenia zuluensis* (Beddard, 1907) | Zululand stumpy earthworm |

## Discussion and conclusions

The list of species of earthworms in KwaZulu-Natal gives each species a standardized English name that can be used for conservation planning and other conservation activities. Although identification of earthworm species usually has to be done by specialists and trained technicians, certain genera or species can be distinguished by external features such as feel, size and colour, in conjunction with distribution. Nevertheless, keys are available to distinguish between genera and species, including introduced species (e.g. Plisko 1992, 1993, 1997, 1998, 2000b, 2002a, 2004, 2006, 2013; Plisko and Nxele 2015; Plisko and Zicsi 1991; Zicsi and Pajor 1992). We trust that this short communication will assist with the inclusion of earthworm taxa in conservation activities and planning.

## Acknowledgements

We thank Ezemvelo KZN Wildlife and the KwaZulu-Natal Museum for assisting with the research and publication of this work. The ideas, arguments and opinions expressed in this manuscript are that of the authors and do not necessarily represent those of Ezemvelo KZN Wildlife. Danuta Plisko and Csaba Csuzdi are thanked for their useful comments and suggestions which improved the manuscript.

## References

Armstrong AJ, Hamer ML (2015) English names of the millipedes (Diplopoda) of KwaZulu-Natal. African Invertebrates 56(1): 147–159. https://doi.org/10.5733/afin.056.0111

Beddard FE (1897) On a collection of earthworms from South Africa belonging to the genus *Acanthodrilus*. With an Appendix: on a new genus of earthworms belonging to the family Eudrilidae. Proceedings of the Zoological Society of London 1897: 336–349.

Beddard FE (1907) On two new species of the African genus (*Microchaetus*) belonging to the collection of Oligochaeta in the Museum of Christiania. Proceedings of the Zoological Society of London 1907: 277–281.

Benham WB (1892) Descriptions of three new species of earthworms. Proceedings of the Zoological Society of London 60: 136–152.

Cognetti de Martiis L (1906) Nuove specie dei generi *Pheretima* e *Tritogenia*. Atti della Reale Accademia della Scienze di Torino 41: 591–604.

Jewitt D, Goodman PS, Erasmus BFN, O'Connor TG, Witkowski ETF (2015) Systematic land-cover change in KwaZulu-Natal, South Africa: implications for biodiversity. South African Journal of Science 111(9/10): 1–9. http://dx.doi.org/10.17159/sajs.2015/20150019

Kinberg JGH (1867) Annulata nova. Öfversigt af Kongliga Vetenskaps-akademiens Förhandlingar 23: 97–100.

McGeoch MA, Sithole H, Samways MJ, Simaika JP, Pryke JS, Picker M, Uys C, Armstrong AJ, Dippenaar-Schoeman AS, Engelbrecht IA, Braschler B, Hamer M (2011) Conservation and monitoring of invertebrates in terrestrial protected areas. Koedoe 53(2): 1–13. https://doi.org/10.4102/koedoe.v53i2.1000

Michaelsen W (1899a) Terricolen von verschiedenen Gebieten der Erde. Mitteilungen aus dem Naturhistorischen Museum in Hamburg 16(2): 1–122.

Michaelsen W (1899b) Revision der Kinberg'schen Oligochaeten-Typen. Öfversigt af Kongliga Vetenskaps-akademiens Förhandlingar 56: 413–448.

Michaelsen W (1907) Oligochaeten von Natal und dem Zululand. Arkiv för Zoologi 4(4): 1–12.

Michaelsen W (1913c) The Oligochaeta of Natal and Zululand. Annals of the Natal Museum 2(4): 397–457.

Michaelsen W (1928a) Miscellanea Oligochaetologica. Arkiv för Zoologi 20A(2): 1–15.

Michaelsen W (1928b) 1. Ordnung der Clitellata: Oligochaeta = Regenwürmer und Verwandte. In: Kükenthal W (Ed.) Handbuch der Zoologie 2, Heft 8, 1–118.

Mittermeier RA, Gil PR, Hoffman M, Pilgrim J, Brooks T, Mittermeier CG, Lamoreux J, De Fonseca GAB (2005) Hotspots revisited: Earth's biologically richest and most endangered ecoregions. The University of Chicago Press.

Nxele TC (2015) A new species of *Geogenia* Kinberg, 1867 from the south coast of KwaZulu-Natal, South Africa (Oligochaeta, Microchaetidae). African Invertebrates 56(3): 549–553. https://doi.org/10.5733/afin.056.0303

Pickford GE (1927) The Acanthodriline earthworms of South Africa east of the 25° meridian. Albany Museum 3: 441–465.

Pickford GE (1937) A monograph of the Acanthodriline earthworms of South Africa. W. Heffer & Sons Ltd., Cambridge, 612 pp.

Plisko JD (1992) The Microchaetidae of Natal, with descriptions of new species of *Microchaetus* Rapp and *Tritogenia* Kinberg, and the new genus *Proandricus* (Oligochaeta). Annals of the Natal Museum 33(2): 337–378.

Plisko JD (1993) Eight new species of *Proandricus* Plisko, 1992 from South Africa (Oligochaeta: Microchaetidae). African Invertebrates 34(2): 199–220.

Plisko JD (1996a) *Michalakus* a remarkable new genus of microchaetid earthworm from South Africa (Oligochaeta: Microchaetidae). Annals of the Natal Museum 37: 287–293.

Plisko JD (1996b) Six new earthworm species of the southern African genus *Proandricus* Plisko, 1992 (Oligochaeta: Microchaetidae). Annals of the Natal Museum 37: 295–307.

Plisko JD (1997) New species of the genus *Tritogenia* Kinberg, 1867 from southern Africa (Oligochaeta: Microchaetidae). African Invertebrates 38: 241–281.

Plisko JD (1998) New and little-known species of *Microchaetus* Rapp, 1849, with a key to all species and notes on the significance of certain morphological features (Oligochaeta: Microchaetidae). African Invertebrates 39: 249–300.

Plisko JD (2000a) The role of nature reserves in the protection of the terrestrial earthworm fauna (Oligochaeta) based on the material from Dlinza Forest Nature Reserve (KwaZulu-Natal, South Africa). Lammergeyer 46: 75–80.

Plisko JD (2000b) A new arrangement of species-groups in the genus *Proandricus* Plisko, 1992, with descriptions of four new species and notes on some previously known species (Oligochaeta: Microchaetidae). African Invertebrates 41: 237–262.

Plisko JD (2002a) Nine new earthworm species of *Proandricus* Plisko, 1992 from South Africa and Lesotho (Oligochaeta: Microchaetidae). African Invertebrates 43: 183–203.

Plisko JD (2002b) Three new earthworm species of *Microchaetus* Rapp, 1849, and new data on two earlier known species of this genus (Oligochaeta: Microchaetidae). African Invertebrates 43: 205–214.

Plisko JD (2003) Eleven new South African earthworms (Oligochaeta: Microchaetidae) with new information on some known species, and an inventory of the earthworms of KwaZulu-Natal. African Invertebrates 44(2): 279–325.

Plisko JD (2004) Review of the balantine genus *Udeina* Michaelsen, 1910 with descriptions of six new species in South Africa (Oligochaeta: Acanthodrilidae, Microchaetidae). African Invertebrates 45: 287–313.

Plisko JD (2005) Five new South African earthworm species of the family Microchaetidae (Oligochaeta) with exceptional anatomical features. African Invertebrates 46: 103–113.

Plisko JD (2006) A systematic reassessment of the genus *Microchaetus* Rapp, 1849: its amended definition, reinstatement of *Geogenia* Kinberg, 1867, and erection of a new genus *Kazimierzus* (Oligochaeta: Microchaetidae). African Invertebrates 47: 31–56.

Plisko JD (2007) New species of South African acanthodriline earthworms of the genera *Eodriloides* and *Chilota,* with a redescription of *Chilota quindecimus* (Oligochaeta: Acanthodrilidae). African Invertebrates 48(2): 33–40.

Plisko JD (2008) New South African Acanthodrilinae earthworm species, with new data for some earlier known members of the genus *Parachilota* (Oligochaeta: Acanthodrilidae). African Invertebrates 49(2): 21–36. https://doi.org/10.5733/afin.049.0203

Plisko JD (2012) An annotated checklist of the South African Acanthodrilidae (Oligochaeta: Acanthodrilidae: Microchaetidae, Benhamiinae). Zootaxa 3458: 4–58.

Plisko JD (2013) A new family Tritogeniidae for the genera *Tritogenia* and *Michalakus*, earlier accredited to the composite Microchaetidae (Annelida: Oligochaeta). African Invertebrates 54(1): 69–92. https://doi.org/10.5733/afin.054.0107

Plisko JD, Nxele TC (2015) An annotated key separating foreign earthworm species from the indigenous South African taxa (Oligochaeta: Acanthodrilidae, Eudrilidae, Glossoscolecidae, Lumbricidae, Megascolecidae, Microchaetidae, Ocnerodrilidae and Tritogeniidae). African Invertebrates 56(3): 663–708. https://doi.org/10.5733/afin.056.0312

Plisko JD, Zicsi A (1991) Über neue *Tritogenia*-Arten aus Süd-Afrika (Oligochaeta: Microchaetidae). Mitteilungen aus dem Naturhistorischen Museum in Hamburg 88: 111–123.

Reinecke AJ, Ryke PA (1969) A new species of the genus *Geogenia* (Microchaetidae, Oligochaeta) from Lesotho, with notes on two exotic earthworms. Revue d'Ecologie et de Biologie du Sol 6: 515–523.

Zicsi A (1998) Neue und seltene terrestrische Oligochaeten aus Südafrika. Mitteilungen aus dem Naturhistorischen Museum in Hamburg 95: 59–77.

Zicsi A, Pajor I (1992) Über die Regenwürmer (Oligochaeta) in den Natal-Drakensbergen Südafrikas. Opuscula Zoologica Budapest 25: 125–136.